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Applicant(s): LI et al.

Appln No.: 10/075,105

Filed: February 13, 2002

For: A BI-DIRECTIONAL DUAL PROMOTER
COMPLEX WITH ENHANCED
PROMOTER ACTIVITY FOR TRANSGENE
EXPRESSION IN EUKARYOTES

Group Art

Unit: 1645

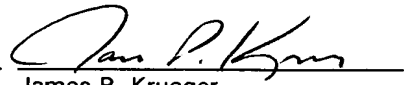
Examiner: Not Yet Known

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08/19/02

Date



James P. Krueger

Registration No. 35, 234

Attorney for Applicant(s)

TRANSMITTAL OF FORMAL DRAWINGS

Box MISSING PARTS

Commissioner of Patents and Trademarks

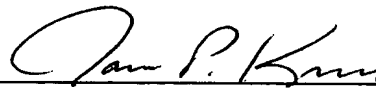
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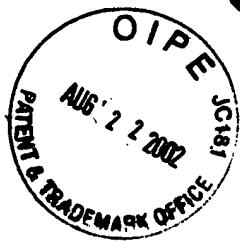
Sir:

To correct informalities in the drawings as noted in the Notice to File Missing Parts of Nonprovisional Application dated April 18, 2002, Applicants submit herewith formal drawings (Figure 1 -27 on 37 sheets) for this application. The two-month period of response set in the Notice of Missing Parts expired on June 18, 2002, as a result this submission includes a two-month Petition for Extension of Time.

Respectfully submitted,
FITCH, EVEN, TABIN & FLANNERY

By: 
James P. Krueger
Registration No. 25,747

Date: August 19, 2002
120 South LaSalle Street
Suite 1600
Chicago, IL 60603-3406
Telephone: (312) 577-7000
Facsimile: (312) 577-7007



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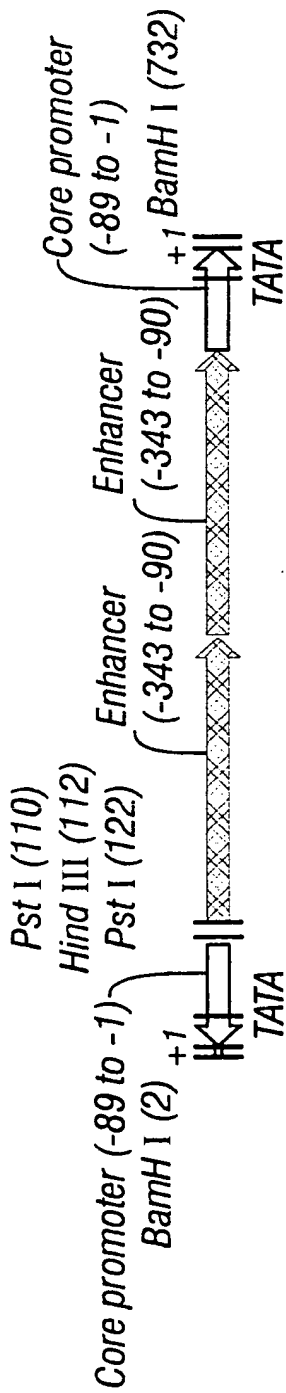


FIG. 1

BamHI

1 GGATCCAGCG TGTCCTCICC AAATGAAATG AACTTCCTTA TATAGAGGAA GGGTCTTGCG AAGGATAGTG GGATTGTGCG
CCTAGGTGCG ACAGGAGAGG TTTACTTTAC TTGAAGGAAT ATAATCCTT CCCAGAAGCG TTCCTATCAC CCTAACACGC

PstI HindIII PstI

81 TCATCCCTTA CGTCAGTGA GATACTGCAG AAGCTTCTGC AGTGAGACTT TTCAACAAAG GGTAAATATCG GGAACCTICC
AGTAGGAAT GCAGTCACCT CTATGACGTC TTCGAAGACG TCACTCTGAA AAGTTGTTTC CCATTATAGC CCTTTGGAGG

161 TCGGATTCCA TTGCCCAGCT ATCTGTCACT TCATCAAAAG GACAGTAGAA AAGGAAGGTG GCACCTACAA ATGCCATCAT
AGCCTAAGGT AACGGGTGCA TAGACAGTGA AGTAGTTTC CTGTCACTT TTCCTTCCAC CGTGGATGTT TACGGTAGTA

241 TCGGATAAAG GAAAGGCTAT CGTTCAAGAT GCCTCTGCCG ACAGTGTGCC CAAAGATGGA CCCCACCCA CGAGGAGCAT
ACGCTATTTC CTTCCGATA GCAAGTTCTA CGGAGACGGC TGTACCAGG GTTCTACCT GGGGTGGT GCTCCTCGTA

321 CGTGGA AAAA GAAGACGTTT CAACCACGTC TTCAAGCAA GTGGATTGAT GTGATTGCAG TGAGACTTTT CAACAAAGGG
GCACCTTTT CTCTGCAAG GTTGGTGCAG AAGTTTCGT CACCTAATA CACTAACGTC ACTCTGAAA GTTGTTTCCC

401 TAATATCGGG AAACCTCCTC GGATTCCATT GCCCAGCTAT CTGTCACTTC ATCAAAAGGA CAGTAGAAAA GGAAGGTGGC
ATTATAGCCC TTGGAGGAG CTAAGGTAA CGGGTCGATA GACAGTGAAG TAGTTTCTCT GTCATCTTTT CCTCCACCG

481 ACCTACAAAT GCCATCATTG CGATAAAGGA AAGGCTATCG TTCAAGATGC CTCTGCCGAC AGTGTGCCCA AAGATGGACC
TGGATGTTA CGGTAGTAAC GCTATTTCCT TTCCGATAGC AAGTTCTACG GAGACGGCTG TCACCAGGTT TTCTACCTGG

FIG. 2A

561 CCCACCCACG AGGAGCATCG TGGAAAAGA AGACGTTCCA ACCACGTCTT CAAAGCAAGT GGATTGATGT GATACTCTCA
 GGGTGGGTGC TCCTCGTAGC ACCTTTTCT TCTGCAAGT TGGTGCAGAA GTTTCGTTCA CCTAACTACA CTATAGAGGT

 641 CTGACGTAAG GGATGACGCA CAATCCCACT ATCCTTCGCA AGACCCCTCC TCTATATAAG GAAGTTCATT TCATTGGAG
 GACTGCATTG CCTACTGCGT GTAGGGTGA TAGGAAGCGT TCTGGGAAGG AGATATATTC CTTCAAGTAA AGTAAACCTC

 BamHI

 721 AGGACACGCT GGATCC Seq. ID No. 1
 TCCTGTGCGA CCTAGG Seq. ID No. 2

FIG. 2B

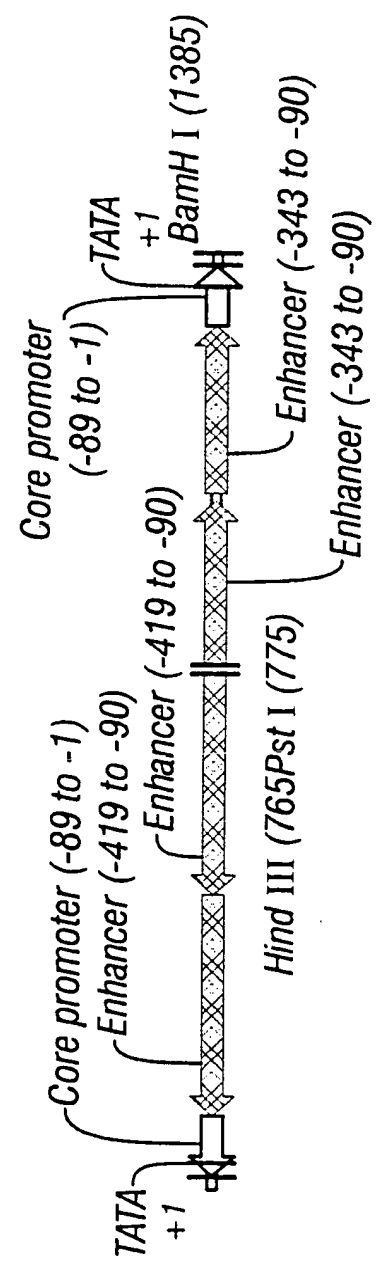


FIG. 3



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SnaBI

Seq. ID No. 3

1 TAGGTACAGC GTGTCCTCTC CAAATGAAT GAACCTCCTT ATATAGAGGA AGGGTCTTGC GAAGGATAGT GGGATTGTGC

Seq. ID No. 4

ATGCATGTGC CACAGGAGAG GTTTACTTTA CTTGAAGGAA TATATCTCCT TCCAGAAGC CTTCTATCA CCCTAACACG

81 GTCATCCCTT ACGTCAGTGG AGATATCACA TCCATCCACT TGCCTTGAAG ACGTGGTTGG AACGTCTTCT TTTCCACGA
CAGTAGGGAA TGCAGTCACC TCTATAGTGT AGTTAGGTGA ACGAACTTC TGCACCAACC TTGCAGAAGA AAAAGGTGCT

161 TGCTCCTCGT GGGTGGGGT CCATCTTTGG GACCACTGTC GGCAGAGGCA TCTTCAACGA TGGCCTTTCC TTTATCGCAA
ACGAGGAGCA CCCACCCCA GGTAGAAACC CTGGTGACAG CCGTCTCCGT AGAAGTTGCT ACCGGAAGG AAATAGCGTT

241 TGATGGCAAT TGTAGGAGCC ACCTTCCTTT TCCACTATCT TCACAATAAA GTGACAGATA GCTGGGCAAT GGAATCCGAG
ACTACCGTAA ACATCCTCGG TGAAGGAAA AGGIGATAGA AGTGTTATTT CACTGTCTAT CGACCCGTTA CCTTAGGCTC

321 GAGGTTTCCG GATATTACCC TTTGTTGAAA AGTCTCAATT GCCCTTTGGT CTTCTGAGAC TGTATCTTTG ATATTTTGG
CTCCAAGGC CTATAATGGG AAACAACCTT TCAGAGTTAA CCGGAAACCA GAAGACTCTG ACATAGAAAC TATAAAACC

401 AGTAGACAAG TGTGTCGTGC TCCACCATGT TGATTCACAT CAATCCACTT GCTTTGAAGA CGTGGTTGA ACGTCTTCTT
TCATCTGTTC ACACAGCAGC AGGTGGTACA ACTAAGTGA GTTAGGTGAA CGAACTTCT GCACCAACCT TGCAGAAGAA

481 TTTCCACGAT GCTCCTCGTG GGTGGGGTGC CATCTTTGGG ACCACTGTGG GCAGAGGCAT CTTCAACGAT GGCCTTTCCT
AAAGGTGCTA CGAGGAGCAC CCACCCCCAG GTAGAAACCC TGGTGACAGC CGTCTCCGTA GAAGTTGCTA CCGGAAAGGA

FIG. 4A

561 TTATCGCAAT GATGGCATT GTAGGAGCCA CCTTCCTTT CCACIACTT CACAATAAAG TGACAGATAG CTGGGCAATG
 AATAGCGTTA CTACCGTAA CATCCTCGT GGAAGGAAA GTGATAGAA GTGTTATTC ACTGTCTATC GACCCGTTAC

641 GAATCCGAGG AGGTTTCGG ATATTACCCT TTGTGAAAA GTCICAATTG CCCTTIGGTC TTCTGAGACT GTATCTTIGA
 CTTAGGCTCC TCCAAGGCC TATAATGGGA AACAACCTTT CAGAGTTAAC GGGAAACCAG AAGACTCTGA CATAGAAACT

HindIIIIPstI

721 TATTTTIGGA GTAGACAAAGT GTGTGCTGCT CCACCATGTT GATAAGCTTC TGCAGTGAGA CTTTTCACAA AAGGTAATA
 ATAAAAACCT CATCTGTTCA CACAGCACGA GTGGGTACAA CTATTGGAAG ACGTCACICT GAAAAGTTGT TTCCCATTA

801 TCGGGAACC TCCTCGGATT CCATTGCCCA GCTATCTGTC ACTTCATCAA AAGGACAGTA GAAAAGGAAG GTGGCACCTA
 AGCCCTTTGG AGGAGCCTAA GGTAACGGGT CGATAGACAG TGAAGTAGT TTCTGTICAT CTTTTCCTTC CACCGTGGAT

881 CAAATGCCAT CATTGCGATA AAGGAAAGGC TATCGTTCAA GATGCCTCTG CCGACAGTGG TCCCAAGAT GGACCCCCAC
 GTTACGGTA GTAACGCTAT TTCTTTCCG ATAGCAAGT CTACGGAGAC GGCTGTCACC AGGTTTCTA CCTGGGGGTG

961 CCACGAGGAG CATCGTGGAA AAAGAAGAGG TTCCAACCAC GTCTTCAAAG CAAGTGGATT GATGTATTG CAGTGAGACT
 GGTGCTCCTC GTAGCACCTT TTCTTCTGC AAGGTGGTG CAGAAGTTT GTTCACCTAA CTACACTAAC GTCACTCTGA

1041 TTTCACAAA GGGTAATAIC GGGAAACCTC CTCGGATTCC ATTGCCCAGC TATCTGTCAC TTCATCAAAA GGACAGTAGA
 AAAGTTGTT CCCATTATAG CCCTTTGGAG GAGCCTAAGG TAACGGGTG ATAGACAGTG AAGTAGTTTT CCTGTCACT

1121 AAAGGAAGGT GGCACCTACA AATGCCATCA TTGGGATAA GGAAAGGCTA TCGTTCAAGA TGCCTCTGCC GACAGTGGTC
 TTTCCTTCCA CCGTGGATGT TTACGGTAGT AACGCTATT CCTTCCGAT AGCAAGTTCT ACGGAGACGG CTGTCACCAG

FIG. 4B

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1201 CCAAAGATGG ACCCCACCC ACGAGGAGCA TCGTGGA AAA AGAAGACGTT CCAACCACGT CTTC AAAGCA AGTGGATTGA
 GGTTC TACC TGGGGGTGGG TGTCTCTCGT AGCACC TTTT TCTTCTGCAA GGTGGTGCA GAAGTTTCGT TCACCTAACT
 1281 TGTGATATCT CCACTGACGT AAGGGATGAC GCACAATCCC ACTATCCTTC GCAAGACCCT TCCTCTATAT AAGGAAGTTC
 ACACTATAGA GGTGACTGCA TTCCTACTG CGTGTAGGG TGATAGGAAG CGTCTGGGA AGGAGATATA TTCCTTCAAG

FIG. 4C

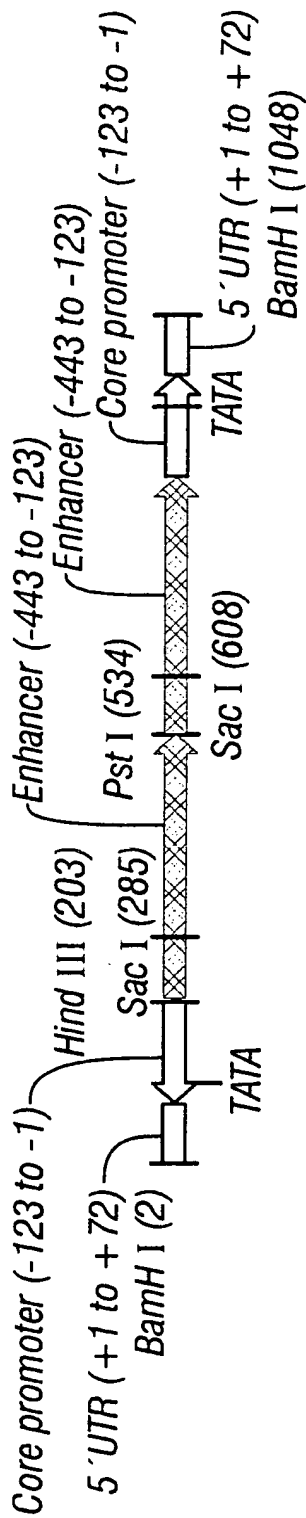


FIG. 5

BamHI

1 GGATCCACAA ACTTACAAAT TTCTCTGAAG TTGTATCCTC AGTACTTCAA AGAAAATAGC TTACACCAA TTTTTCCTTG
CCTAGGIGTT TGAATGTTTA AAGAGACTTC AACATAGGAG TCATGAAGTT TCTTTTATCG AATGTGGTTT AAAAAAGAAC
81 TTTTCACAAA TGCCGAACCTT GGTTCCTTAT ATAGGAAAAC TCAAGGGCAA AAATGACACG GAAAAATATA AAAGGATAAG
AAAAGTGTTT ACGGCTTGAA CCAAGGAATA TATCCTTTTG AGTTCCCGTT TTTACTGTGC CTTTTTATAT TTTCCTATTG

HindIII

161 TAGTGGGGGA TAAGATTCCCT TTGTGATAAG GTTACTTTCC GAAGCTTCCA GAAGGTAATT ATCCAAGATG TAGCATCAAG
ATCACCCCCT ATTCTAAGGA AACACTATTG CAATGAAAGG CTTGGAAGGT CTTCCATTAA TAGGTTCTAC ATCGTAGTTC

SacI

241 AATCCCAATGT TTACGGGAAA AACTATGGAA GTATTATGTG AGCTCAGCAA GAAGCAGATC AATATGCGGC ACATATGCAA
TTAGGTTACA AATGCCCTTT TTGATACCTT CATAATACAC TCGAGTCGTT CTTGCTCTAG TTATACGCCG TGTATACGTT
321 CCTATGTTCA AAAATGAAGA ATGTACAGAT ACAAGATCCT ATACTGCCAG AATACGAAGA AGAATACGTA GAAATTGAAA
GGATACAAGT TTTTACTTCT TACATGTCTA TGTTCTAGGA TATGACGGTC TTATGCTTCT TCTTATGCAT CTTTAACTTT
401 AAGAAGAACC AGGCGAAGAA AAGAATCTTG AAGACGTAAG CACTGACGAC AACAAATGAAA AGAAGAAGAT AAGGTCGGTG
TTCTTCTTGG TCGGCTTCTT TTCTTAGAAC TTCIGCATTC GTGACTGCTG TTGTTACTTT TCTTCTTCTA TTCAGCCAC

FIG. 6A



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PstI

481 ATTGTGAAAG AGACATAGAG GACACATGTA AGGTGGAAAA TGTAAGGGCT GCAGAAGGTA ATTATCCAAG ATGTAGCATC
TAACACTTTC TCTGTATCTC CTGTGTACAT TCCACCTTTT ACATCCCCGA CGTCTTCCAT TAATAGGTTT TACATCGTAG

SacI

561 AAGAAITCCAA TGTTACGGG AAAAATAATG GAAGTATTAT GTGAGCTCAG CAAGAAGCAG ATCAATAATGC GGCACATAATG
TTCTTAGGTT ACAAATGCC TTTTIGATAC CTTTATAATA CACTCGAGTC GTTCTTCGTC TAGTTATACG CCGTGTATAC

641 CAACCTAATG TCAAAAATGA AGAATGTACA GATACAAGAT CCTATACTGC CAGAATACGA AGAAGAATAC GTAGAAATG
GTTGGATACA AGTTTTTACT TCTTACATGT CTATGTTCTA GGATATGACG GTCTTATGCT TCTTCTTATG CATCTTTAAC

721 AAAAAGAAGA ACCAGGCGAA GAAAAGAATC TTGAAGACGT AAGCACTGAC GACAACAATG AAAAGAAGAA GATAAGGTG
TTTTTCTTCT TGGTCCGCTT CTTTCTTAG AACTTCTGCA TTCGTGACTG CTGTTGTTAC TTTTCTTCTT CTATCCAGC

801 GTGATTGTGA AAGAGACATA GAGGACACAT GTAAGGTGGA AAATGTAAGG GCGGAAAGTA ACCTTATCAC AAAGGAATCT
CACTAACACT TTCTCIGTAT CTCCTGTGTA CATTCCACCT TTTACATTCC CGCCTTTTAT TGGAAATAGTG TTTCTTTAGA

881 TATCCCCCAC TACTTATCCT TTTATATTTT TCCGTGTCAT TTTTGCCCTT GAGTTTTCCT ATATAAGGAA CCAAGTTCCG
ATAGGGGGTG ATGAATAGGA AAATATAAAA AGGCACAGTA AAAACGGGAA CTCAAAAGGA TATATTCTT GGTTCAGGCC

961 CATTGTGAA AACAGAAGAA AATTGGTGT AAGCTATTTT CTTTGAAGTA CTGAGGATAC AACTTCAGAG AAATTGTGAA
GTAACACTT TTGTTCTTTT TTAACCCACA TTGATAAAA GAACTTCAT GACTCCTATG TTGAAGTCTC TTTAACACTT

FIG. 6B

BamHI

1041 GTTTGTGGAT CC Seq. ID No. 5
 CAAACACCTA GG Seq. ID No. 6

FIG. 6C

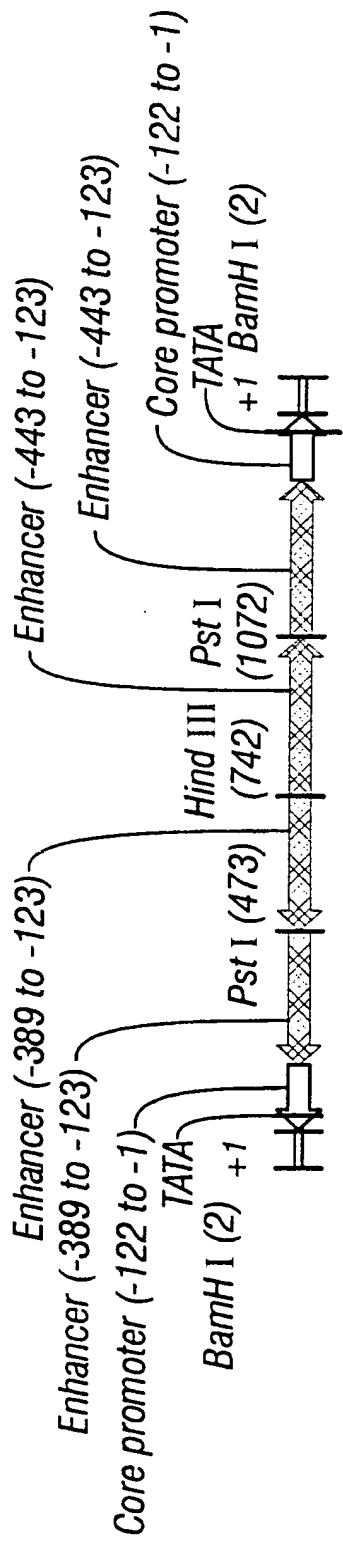


FIG. 7

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1  GGATCCACAA ACTTACAAAT TTCTCTGAAG TTGTATCCTC AGTACTTCAA AGAAAATAGC TTACACCAAA TTTTTCCTTG
   CCTAGGTGTT TGAATGTTTA AAGAGACTTC AACATAGGAG TCAIGAAGTT TCITTTATCG AATGTGGTTT AAAAAAGAAC
-----
81  TTTTCACAAA TGCCGAACCT GGTTCCTTAT ATAGGAAAC TCAAGGGCAA AATGACACAG GAAAAATATA AAAGGATAAG
   AAAAGTGTTC ACGGCTTGAA CCAAGGAATA TATCCTTTTG AGTCCCGTT TTTACTGIGC CTTTTTAAAT TTTCTTATTC
-----
161 TAGTGGGGGA TAAGATTCTT TTGTGATAAG GTTACTTTCC GCCCTTACAT TTCCACCTT ACAATGCTCC TCTATGCTCTC
   ATCACCCCTT ATTCTAAGGA AACACTATTC CAATGAAAGG CGGGGATGTA AAAGGTGGAA TGTACACAGG AGATACAGAG
-----
241 TTTTCACAAT ACCGACCCTA TCTTCTCTT TTCAATTGTT TCGTCAGTGC TTACGCTTC AAGATTCCTT TCTTCGCCCTG
   AAAGTGTTAG TGGCTGGAAT AGAAGAAGAA AAGTAACAAC AGCAGTCAGG AATGCAGAAG TTCTAAGAAA AGAAGCGGAC
-----
321 GTTCTTCTTT TTCAATTCTT ACGTATCTT CTTCGTATTC TGGCAGTATA GGAATCTGTA TCTGTACATT CTTCATTTTT
   CAAGAAGAAA AAGTTAAAGA TGCATAAGAA GAAGCATAAG ACCGTCATAT CCTAGAACAT AGACATGTAA GAAGTAAAAA
-----
401 GAACATAGGT TGCATAATG CCGCATATTT ATCTGCTTCT TGCTGAGCTC ACATAATACT TCCATAGCTG CAGCCCTTAC
   CTGTATCCA ACGTATACAC GCGGTATAAC TAGACGAAGA ACGACTCGAG TGTATTAGA AGGTATCGAC GTGCGGAATG
-----
481 ATTTTCCACC TTACAATGTT CCTCTATGTC TCTTTCACAA TCACCGACCT TATCTTCTTC TTTTCATTGT TGTGCTCAGT
   TAAAAGGTGG AATGTACACA GGAGATACAG AGAAAGTGTT AGTGGCTGGA ATAGAAGAAG AAAAGTAACA ACAGCAGTCA
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SacI PstI

FIG. 8A



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561 GCTIACGTCT TCAAGATTCT TTTCTTCGCC TGGTTCTTCT TTTTCAATTT CTACGTATTC TTCTTCGTAT TCIGGCAGTA
CGAATGCAGA AGTTCTAAGA AAGAAGCGG ACCAAGCGG AAGAGTAA GATGCATAAG AAGAAGCATA AGACCGTCAT

SacI

641 TAGGATCTTG TATCIGTACA TTCTTCAATTT TTGAACATAG GTTGCATATG TGCCGCATAT TGATCTGCTT CTGTCTGAGC
ATCCTAGAAC ATAGACATGT AAGAAGTAAA AACTTGTAATC CAAGTATAC ACGGCGTATA ACTAGACGAA GAACGACTCG

SacI HindIII

721 TCACATAATA CTTCATAGG AAGCTTCAGA AGGTAATTAT CCAAGATGTA GCATCAAGAA TCCAATGTTT ACGGGAAGAAA
AGTGTATTAT GAAGGTAACC TTCGAAGICT TCCATTAAAT GGTCTACAT CGTAGTTCTT AGGTACAAA TGCCCTTTT

SacI

801 CTATGGAAGT ATTAIGTGAG CTCAGCAAGA AGCAGATCAA TATGCGGCAC ATATGCAACC TATGTTCAA AATGAAGAAT
GATACCTTCA TAATACACTC GAGTCGTCT TCGTCTAGTT ATACGCCGTG TATACGTTGG ATACAAGTTT TTACTTCTTA

881 GTACAGATAC AAGATCCTAT ACTGCCAGAA TACGAAGAAG AATACGTAGA AATTGAAAA GAAGAACCAG GCGAAGAAAA
CATGCTATG TTCTAGGATA TGACGGTCTT ATGCTTCTTC TTATGCATCT TTAACTTTTT CTTCCTGGTC CGCTTCTTTT

961 GAATCTTGAA GACGTAAGCA CTGACGACAA CAATGAAAAA AAGAAGATAA GGTCGGTGAT TGTGAAAGAG ACATAGAGGA
CTTAGAACTT CTGCATTCTG GACTGCTGTT GTTACTTTTC TTCTTCTATT CCAGCCACTA ACACTTTCTC TGTATCTCCT

PstI

FIG. 8B



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1041 CACAIGTAAG GTGGAAAATG TAAGGGCTGC AGAAGGTAAT TATCCAAGAT GTAGCATCAA GAATCCAATG TTTACGGGAA
GTGTACATTC CACCTTTTAC ATTCCCGAGG TCTTCCATTA ATAGGTCTA CATCGTAGT CTTAGGTIAC AAATGCCCTT

SacI

1121 AACTATGGA AGTATTATGT GAGCTCAGCA AGAAGCAGAT CAATAIGCGG CACATAIGCA ACCTAIGTTC AAAAAATGAAG
TTTGATACCT TCATAATACA CTCGAGTCGT TCTTCGTCTA GTTATACGCC GTGTATACGT TGGATACAAG TTTTACTTC

1201 AATGTACAGA TACAAGATCC TATACTGCCA GAATACGAAG AAGAATACGT AGAAATTGAA AAAGAAGAAC CAGGCGAAGA
TTACATGCT ATGTTCTAGG ATATGACGGT CTTATGCTTC TTCTTATGCA TCTTAACTT TTTCTTCTTG GTCCGCTTCT

1281 AAAGAATCTT GAAGACGTAA GCACTGACGA CAACAATGAA AAGAAGAAGA TAAGGTGGT GATTGIGAAA GAGACATAGA
TTTCTTAGAA CTTCTGCATT CGTACTGCT GTTGTTACTT TTCTTCTTCT ATTCCAGCCA CTAACACTTT CTCTGTATCT

1361 GGACACATGT AAGGTGGAAA ATGTAAGGGC GGAAAGTAAC CTTATCACAA AGGAATCTTA TCCCCACTA CTTATCCTT
CCTGTGTACA TTCCACCCTT TACATTCCCG CCTTTCATTG GAATAGTGT TCCTTAGAAT AGGGGGTGAT GAATAGGAAA

1441 TATATTTTTC CGTGTCACTT TTGCCCTTGA GTTTTCTTAT ATAAGGAACC AAGTTCGGCA TTTGTGAAAA CAAGAAAAAA
ATATAAAAAG GCACAGTAAA AACGGGAAC CAAAGGATA TATTCCTTGG TTCAAGCCGT AACACCTTT GTTCTTTTT

BamHI

1521 TTITGGTGTA GCTATTTTCT TTGAAGTACT GAGGATACAA CTTCAGAGAA ATTTGTAAGT TTGTGGATCC Seq. ID No. 7
AAACCACATT CGATAAAAGA AACTTCATGA CTCCTATGTT GAAGTCTCTT TAAACATTCA AACACCTAGG Seq. ID No. 8

FIG. 8C

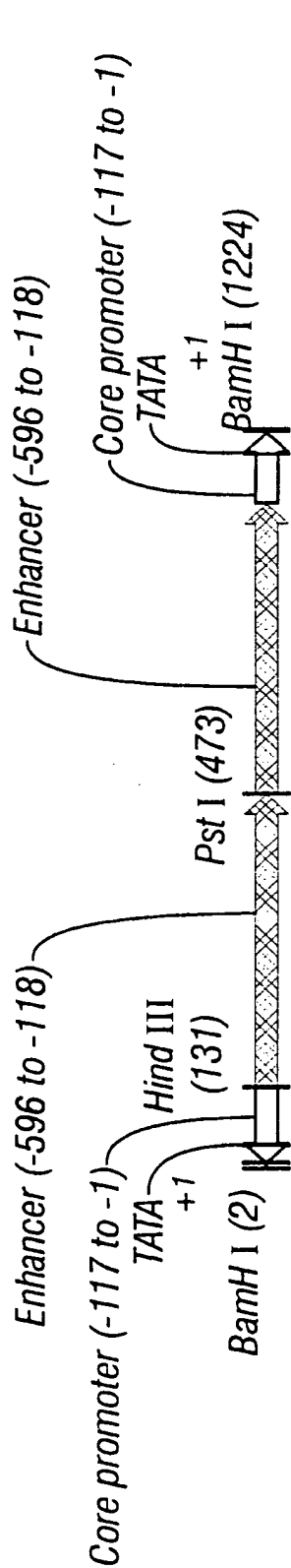


FIG. 9

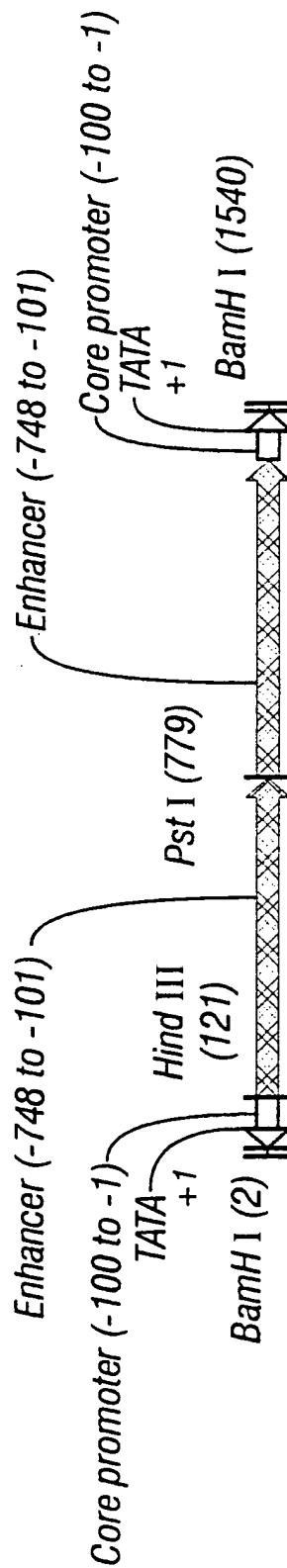


FIG. 11

BamHI

1 GGATCCTTGT TTTCAAAGCG GAGAGGAAAA TATATGAATT TATATAGCGG GGTTTATCTC TTACAACCTTT ATTTTCGGCC
CCTAGGAACA AAAGTTTCGC CTCCTCTTTT ATATACITAA ATATATCCGC CCAATAGAG AATGTTGAAA TAAAAGCCGG

HindIII

81 TTTCAAAAA ATAATTAAAA TCGACAGACA CGAATCATTT CGACCACAGA AGCTTCAACT ATTTTATGT ATGCAAGAGT
AAAGTTTTT TATTAATTT AGCTGCTGT GCTTAGTAAA GCTGGTGCT TCGAAGTTGA TAAAAATACA TACGTTCTCA

161 CAGCATATGT ATAATTGATT CAGAATCGTT TTGACGAGTT CGGATGTAGT AGTAGCCATT ATTAAATGTA CATACTAATC
GTCGATACA TATTAACATA GTCTTAGCAA AACTGCTCAA GCCTACATCA TCATCGGTAA TAAATTACAT GTATGATTAG

241 GTGAATAGTG ATAATGATGAA ACATTGTATC TTATTGTATA AATATCCATA AACACATCAT GAAAGACACT TTCTTTCAG
CACTTATCAC TATACTACTT TGTAAACATAG AATAACATAT TTATAGGTAT TTGIGTAGTA CTTTCTGTGA AAGAAAGTGC

321 GTCIGAATTA ATTAATGATAC AATTCTAATA GAAACGAAT TAAATTACGT TGAATTGTAT GAAATCTAAT TGAACAAGCC
CAGACTTAAT TAATACTATG TTAAGATTAT CTTTGTCTTA ATTTAATGCA ACTTAACATA CTTTAGATTA ACTTGTTCGG

401 AACCACGACG ACGACTAACG TTGCCCTGGAT TGACTCGGTT TAAGTTAACC ACTAAAAAA CGGAGCTGTC ATGTAACACG
TTGGTGCTGC TGCTGATTGC AACGGACCTA ACTGAGCCAA ATTCAATTGG TGAATTTTTT GCCTCGACAG TACATTGTGC

481 CGGATCGAGC AGGTCACAGT CATGAAGCCA TCAAGCAAA AGAACTAATC CAAGGCTGA GATGATTAAAT TAGTTTAAAA
GCCTAGCTCG TCCAGTGTCA GTACTTCGGT AGTTTCGGT TCTTGATTAG GTTCCCGACT CTACTAATTA ATCAAAATTT

PstI

FIG. 10A



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561 ATTAGTTAAC ACGAGGGAAA AGGCTGTCTG ACAGCCAGGT CACGTTAICT TTACCTGCAG CAACTAATTT TATGTATGCA
TAATCAATTG TGCTCCCTTT TCCGACAGAC TGTCGGTCCA GTGCAATAGA AATGGACGTC GTTGATAAAA ATACATACGT

641 AGAGTCAGCA TATGTATAAT TGATTCAGAA TCGTTTGGAC GAGTTCGGAT GTAGTAGTAG CCATTATTTA ATGTACATAC
TCTCAGTCGT ATACATATTA ACTAAGTCTT AGCAAAACTG CTCAAGCCTA CATCATCATC GGTAATAAAT TACATGTATG

721 TAATCGTGAA TAGTGATATG ATGAAACATT GTATCTTATT GTATAAATAT CCATAAACAC ATCATGAAAG ACACTTTCTT
ATTAGCACTT ATCACTATAC TACTTTGTAA CATAGAATAA CATAATTATA GGTATTGTG TAGTACTTTC TGTGAAAGAA

801 TCACGGTCTG AATTAATTAT GATACAATTC TAATAGAAA CGAATTAAAT TACGTTGAAT TGTATGAAAT CTAATTGAAC
AGTGCCAGAC TTAATTAATA CTAIGTTAAG ATTAICTTTT GCCTTAATTTA ATGCAACTTA ACATACITTA GATTAACITG

881 AAGCCAACCA CGACGACGAC TAACGTTGCC TGGATTGACT CGGTTTAAGT TAACCACCTAA AAAAAACGGAG CTGTCATGTA
TTCGGTGGT GCTGCTGCTG ATTGCAACGG ACCTAACTGA GCCAAATTCA ATGGIGATT TTTTGGCCTC GACAGTACAT

961 ACACGCGGAT CGAGCAGGTC ACAGTCATGA AGCCATCAA GCAAAGAAC TAATCCAAGG GCTGAGATGA TTAATTAGTT
TGTGCGCCTA GCTCGTCCAG TGTCACTACT TCGGIAGTTT CGTTTCTTG ATTAGGTCC CGACTCTACT AATTAATCAA

1041 TAAAAATTAG TTAACACGAG GGAAAAGGCT GTCTGACAGC CAGGTCACGT TATCTTTACC TGTGGTCGAA ATGATTCGTG
ATTTTAAATC AATTGTGCTC CCTTTCCGA CAGACTGTG GTCCAGTGA ATAGAAATGG ACACCAGCTT TACTAAGCAC

1121 TCTGTGCAAT TTAATTATTT TTTTGAAAGG CCGAAAATAA AGTTGTAAGA GATAAACCCG CCTATATAAA TTCATATATT
AGACAGCTAA AATTAATAAA AAAACTTCC GGCCTTTATT TCAACATICT CTATTGGGC GGATATATTT AAGTATATAA

BamHI

FIG. 10B

1201 TTCCTCTCCG CTTTGAAAC AAGGATCC Seq. ID No. 9
AAGGAGAGGC GAAACTTTTG TTCCTAGG Seq. ID No. 10

FIG. 10C

BamHI

1 GGATCCTTTT GGGTTTTGGT GAGAAACAAG GAATAGTATG GATGGGTTTT AATAGGGAAT AAGAGTTGAA AAGTCTGCAA
CCTAGGAAA CCCAAAACCA CTCCTTGTTC CTTATCATAC CTACCCAAA TTAICCTTA TTCTCAACTT TTCAGACGTT

HindIII

81 TTTGTAAAG AAAAAATTG GAAAGTCACA TGTTAGCAGA AGCTTCAGAC TCATTAACTT AAAAGAAGAT ATAGACTCAT
AAACATTTTC TTTTTTAAC CTTTCAGTGT ACAATCGTCT TCGAAGTCTG AGTAATTGAA TTTTCTTCTA TATCTGAGTA

161 TAACTTAAA GAAGATATAG ATTCCAACAC AGTTCAAAA TTCATAAACG TCAATCTTGG CTAAATTTCT GAACATCAAT
ATTGAATTTT CTTCATATC TAAGGTTGTG TTCAAGTTTT AAGTATTGC AGTTAGAACC GATTAAAGA CTGTGAGTTA

241 GCATTCCCTT AAAATATAGA TAATAAGTTA GGATGTTGTC ACTTCTTAA AGCATATTCC GACTGAGTCT GGTAGAATCT
CGTAAGGAAA TTTTATATCT ATTATTCAAT CCTACAACAG TGAAGAATT TCGTATAAGG CTGACTCAGA CCACTTTAGA

321 CATAAACTTT AGGCCTTATC TCTTCAATTA GGCAATTACT TACCTCCGCT CTACTTTAAG AAAATTCAT GGAGTACACC
GTATTGAAA TCCGGAATAG AGAAGTTAAT CCGTTAATGA ATGGAGGCGA GATGAAATTC TTTTAAGTTA CCTCATGTGG

FIG. 12A

401 ATTATTAAGT TCATATAAAA ATAAAATTAT ATTAATTCTG TCTCTTGTTG GTTCGGCTCTA TCTTTTCTG TTTTCCIGCT
 TAATAATTCA AGTATAATTT TATTTTAATA TAATTAAGAC AGAGAACAAC CAAGCGAGAT AGAAAAGAC AAAAGGACGA

 481 TCAACCATAA CATATACAAG AACTACATTT TCCAAGCTAG ATATATCTAA CATGACTGAC TTTGTAAAT TCTTTTGCCA
 AGTGGIATT GTATAIGTTC TTGATGTAAA AGGTCGATC TATATAGATT GTACTGACTG AAACATTTAA AGAAAACGGT

 561 AGTTAAAGAA AAAAAATGAT GTTATCCAAA TAATAAGAG AAAGAGCCCT AATGAAAAAA ATGATTTACT ATTAGAGTTG
 TCAATTCTT TTTTITACIA CAATAGGTTT ATTATTTCTC TTCTCGGA TTACTTTTT TACTAAATGA TAATCTCAAC

 641 TTCAGCTAAT CACAICAATT ATGGTTTTCA TCAAGTATGA CTAATGGCGG CTCTTATCTC AGCTGATGTG ACATTGAAAT
 AAGTCGATTA GTGTAGTTAA TACCAAAAGT AGTTCATACT GATTACCGCC GAGAAATAGAG TGCACIACAC TGTAACITTA

 721 TCTTTGACTT TAACACTAAT GTCATATGCT TTCAAATTA TAATCCGATA AAGCTGCAGA CTCATTAACT TAAAAGAAGA
 AGAAACTGAA ATTGTGATTA CAGTATACGA AAGTTTAATT ATTAGGCTAT TTCGACGTCT GAGTAATTGA ATTTCTTCT

 801 TATAGACTCA TTAACCTTAA AGAAGATATA GATTCCAACA CAAGTTCAA ATTCTATAAC GTCAATCTTG GCTAAAATTC
 ATATCTGAGT AATTGAATTT TCTTCTATAT CTAAGGTGTG GTTCAAGTTT TAAGTATTG CAGTTAGAAC CGATTTAAAG

 881 TGAACATCAA TGCATTCCTT TAAATATAG ATAATAAGTT AGGATGTTGT CACTTCTTA AGCATATTC CGACTGAGTC
 ACTGTAGTT ACGTAAGGAA ATTTTATAIC TATTATTCAA TCCTACAACA GTGAAAGAAT TTCGTATAAG GCTGACTCAG

 961 TGGTAGAATC TCATAAACTT TAGGCCTTAT CTCTTCAATT AGGCAATTAC TTACCTCCGC TCTACTTTAA GAAAATTCAA
 ACCATCTTAG AGTATTTGAA ATCCGGAATA GAGAAGTTAA TCCGTTAATG AATGGAGCGG AGATGAAAT CTTTTAAGTT

PstI

FIG. 12B



1041	TGGAGTACAC	CATTATTAG	TTCATATAAA	AATAAAATTA	TATTAATTCT	GTCCTTGTT	GGTTCGCTCT	ATCTTTTCT
	ACCTCATGTG	GTAATAATC	AGTATATTT	TTATTTTAAT	ATAATTAAGA	CAGAGAACAA	CCAAGCGAGA	TAGAAAAGA
1121	GTTTTCCTGC	TTCAACCATA	ACATATACAA	GAACACTACAT	TTCCAAGCTA	GATATATCTA	ACATGACTGA	CTTTGTAAT
	CAAAAGGACG	AAGTTGGTAT	TGTATATGTT	CITGATGTAA	AAGGTTCCGAT	CTATATAGAT	TGTACTGACT	GAACATTTA
1201	TTCTTTTGCC	AAGTTAAAGA	AAAAAAATGA	TGTTATCCAA	ATAATAAAGA	GAAAGAGCCC	TAATGAAAAA	AATGATTTAC
	AAGAAAACGG	TTCAATTICT	TTTTTTTACT	ACAATAGGTT	TATTATTICT	CTTCTCGGG	ATTACTTTTT	TTACTAAATG
1281	TATTAGAGTT	G TTCAGCTAA	TCACATCAAT	TATGGTTTTC	ATCAAGTATG	ACTAATGGCG	GCTCTTATCT	CACGTGATGT
	ATAATCTCAA	CAAGTCGATT	AGTGTAGTTA	ATACCAAAG	TAGTTCATAC	TGATTACCGC	CGAGAAATAGA	GTGCACIACA
1361	GACATTGAAA	TTCTTTGACT	TTAACACTAA	TGTCATATGC	TTTCAAATTA	ATAATCCGAT	AAAGTCTGCT	AACATGTGAC
	CTGTAACTTT	AAGAAACTGA	AATTGTGATT	ACAGTATACG	AAAGTTTAAT	TATTAGGCTA	TTTCAGACCGA	TTGTACACIG
1441	TTTCCAATTT	TTTTCTTTTA	CAAAATGCAG	ACTTTTCAAC	TCCTTATCCC	TATTAAAACC	CATCCATACT	ATTCTTGT
	AAAGGTAAAA	AAAAGAAAAAT	GTTTAACGTC	TGAAAAGTTG	AGAATAAGGG	ATAAATTTGG	GTAGGTATGA	TAAGGAACAA
1521	TC TCACCAAA	ACCCAAAAGG	ATCC					
	AGAGTGGTTT	TGGGTTTTCC	TAGG					

BamHI

FIG. 12C

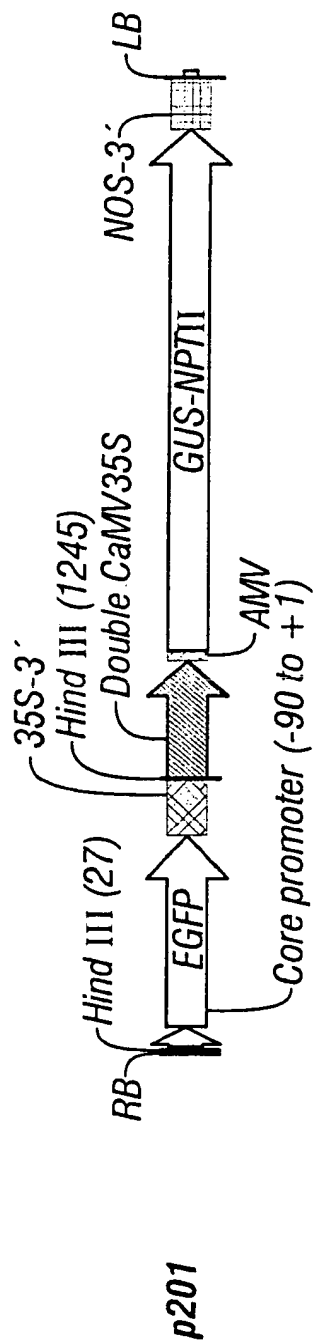


FIG. 13A

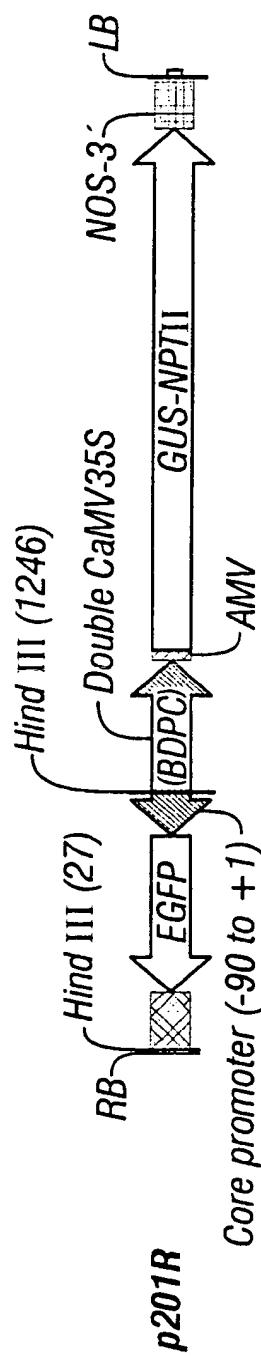


FIG. 13B



FIG. 14B

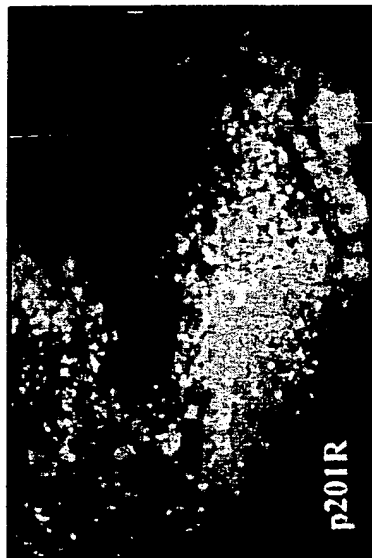


FIG. 14D



FIG. 14A

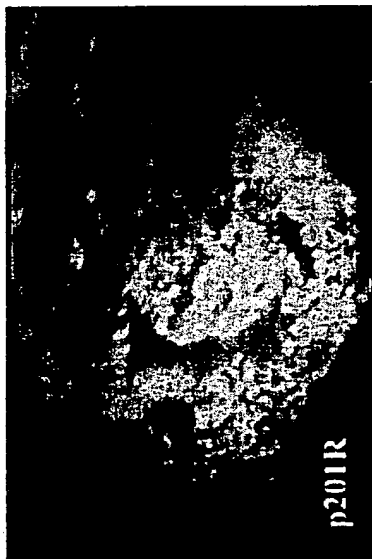


FIG. 14C

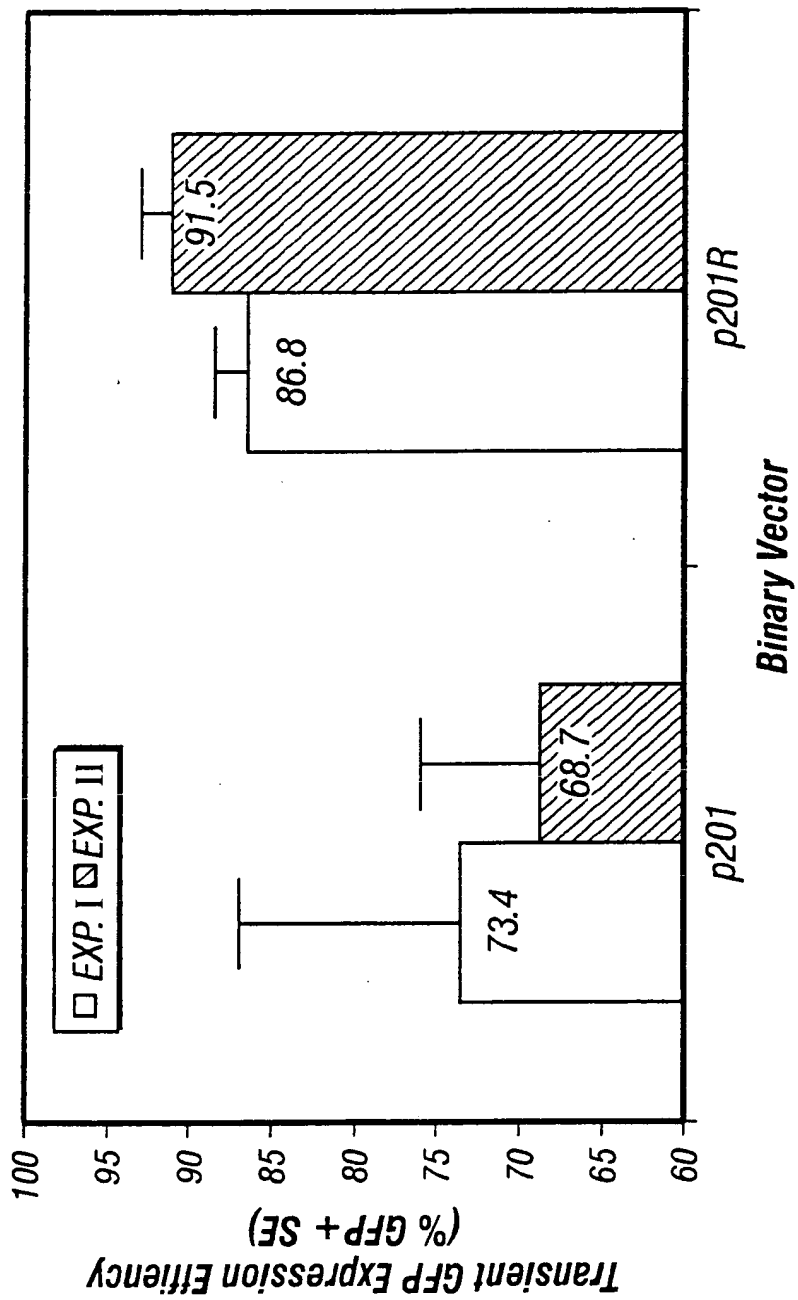


FIG. 15

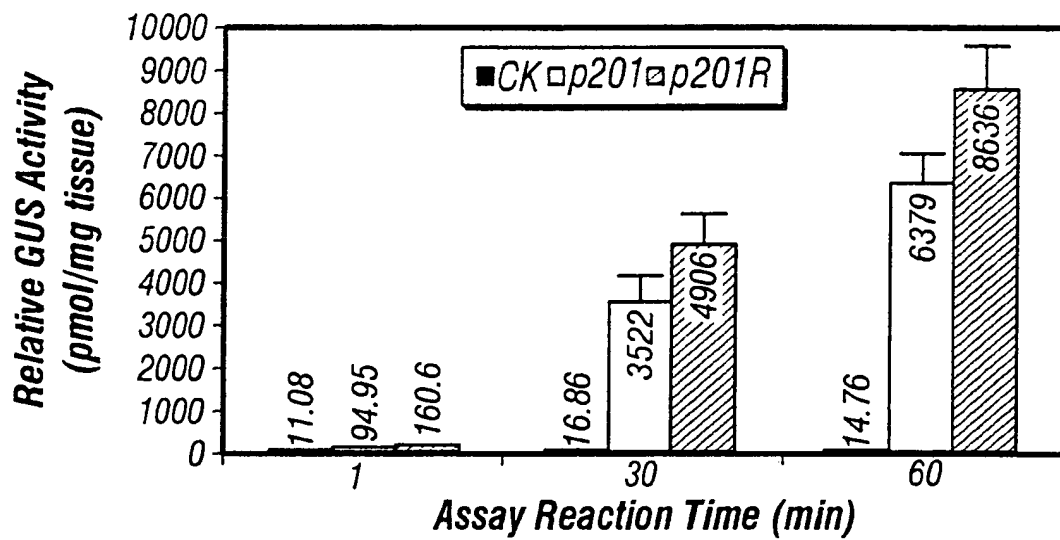


FIG. 16A

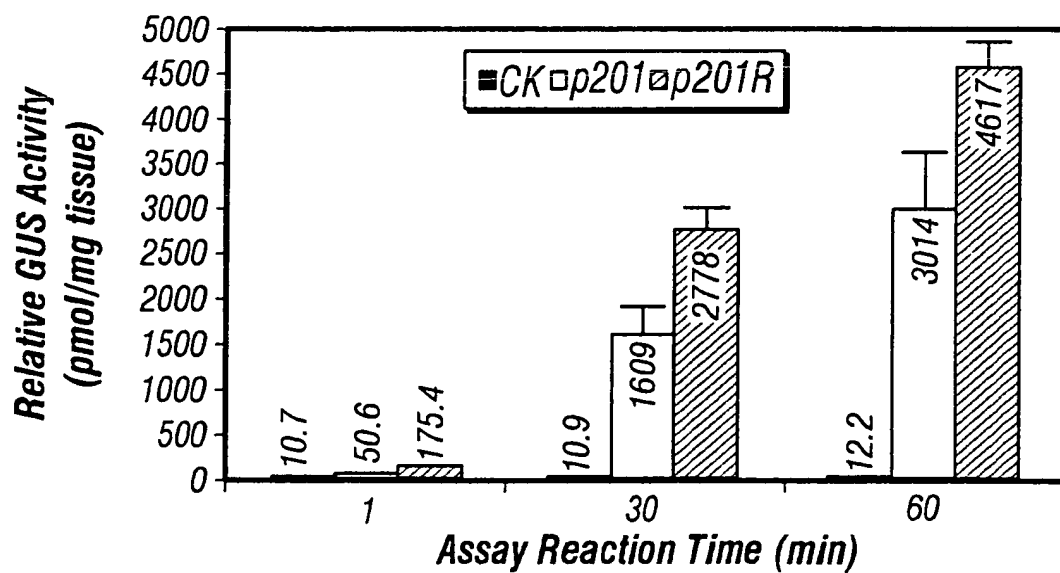


FIG. 16B



FIG. 17A

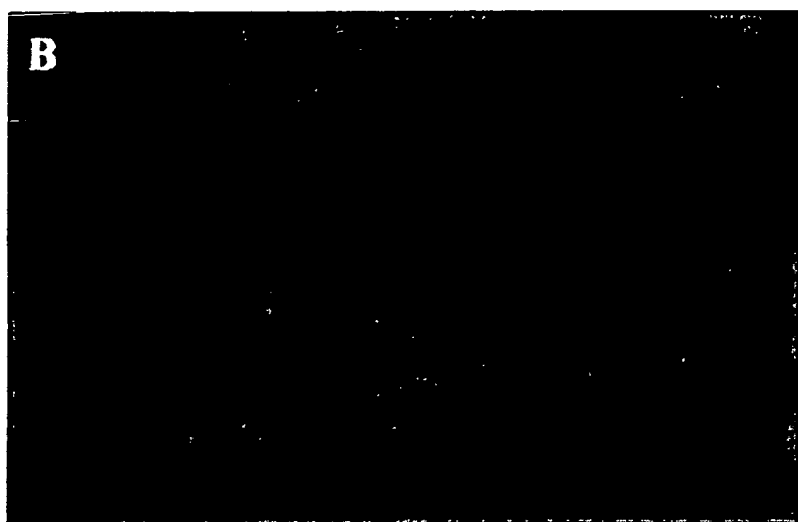


FIG. 17B

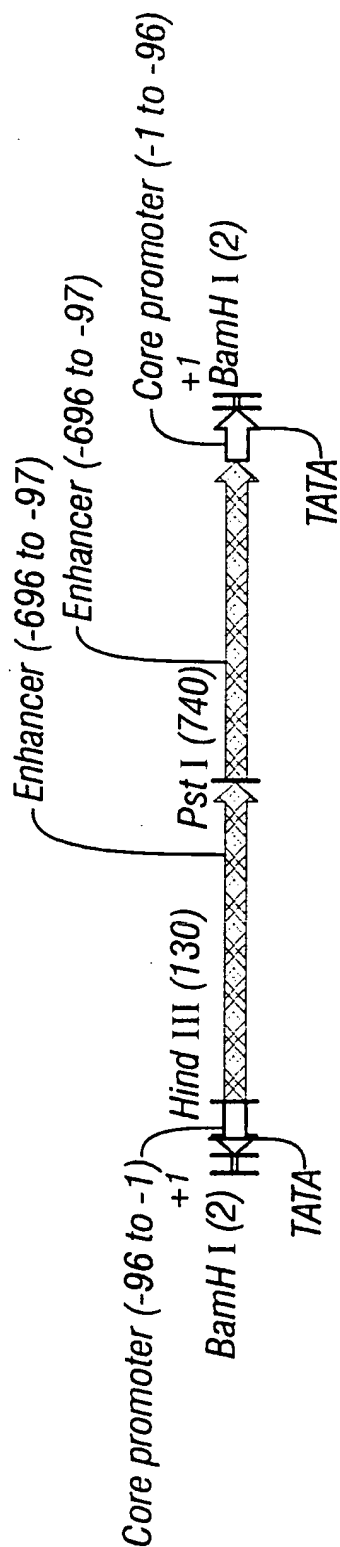


FIG. 18

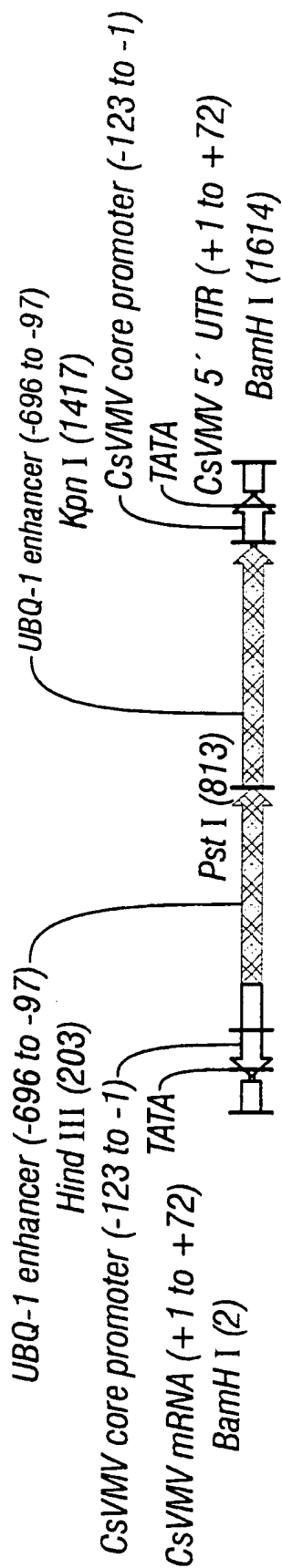


FIG. 20

BarHI

1 GGATCCCTTT TGTGTTTCGT CTTCTCTCAC GTAGAAACCC TAAACAAGGA GGAGGCGGT TTATAATGT CAATGTACGC
 CCTAGGGAAA ACACAAAGCA GAAGAGAGTG CATCTTTGGG ATTTGTTCTT CCTCCGCCCA AATATATACA GTTACATGCG

HindIII

81 GTCTAGGGTT TTGCTAATAT TGGGCTAGGT TACAGGCCTT TACCACAAA GCTTAGTTGA TAAATATTT TTATTGGTT
 CAGATCCCAA AACGATTATA ACCCGATCCA ATGTCCGGAA ATGGTGTTT CGAATCAACT ATTTATATAA AATAAACCAA

161 GTAATTTTGT AATAICCCGG GATATTTCAC AAATTGAACA TAGACTACAG AATTTIAGAA AACAACTTT CTCCTCTTA
 CATTAAACA TTATAGGGCC CTATAAGGCT TTTAACTTGT ATCTGATGTC TTAAATCTT TTGTTTGAAA GAGAGAGAAT

241 TCTCACCTTT ATCTTTTAGA GAGAAAAAGT TCGATTTCCG GTTGACCGGA ATGATCTTT GTTTTTTTG TTTTGTAA
 AGAGTGGAAA TAGAAAAATCT CTCTTTTTCA AGCTAAAGC CAACTGGCT TACATAGAAA CAAAAAAAC AAAACATTGT

321 TATTTCGTT TCCGATTIAG ATCGGATCTC CTTTCCGTT TTGTCGGACC TTCTCCGGT TTATCCGGAT CTAATAATAT
 ATAAAGCAA AGGCTAAATC TAGCCTAGAG GAAAGGCCA AACAGCCTGG AAGAAGGCCA AATAGGCCTA GATTATTATA

401 CCACTTTAGA CTTAGCTAAG TTTGGAATCG TTTTTCGTT AGCTCTTTC AATCGCCTCA TCAICAGCAA GAAGGTGAAA
 GGTAGAATCT GAATCGATTG AACCTAGAC AAAAAACCAA TCGAGAACAG TTAGCGGAGT AGTAGTCGT CTTCACCTT

481 TTTTGTACAA ATAAATCTTA GAATCATGTA GTGCTTTGG ACCTTGGGAA TGATAGAAAC GATTGTAT AGCTACTCTA
 AAAAATGTT TATTTAGAAT CTTAGTACAT CACAGAAACC TGAACCTT ACTATCTTTG CTAACAATA TCGATGAGAT

FIG. 19A

561 TGTATCAGAC CCTGACCAAG ATCCAACAAT CTCATAGGTT TTGTGCAIAT GAAACCTTCG ACTAACGAGA AGTGGICTTT
 ACATAGTCTG GGAAGTGGTC TAGGTGTTA GAGTATCCAA AACACGTATA CTTTGAAGC TGATTGCTCT TCACCAGAAA

641 TAATGAGAGA GATATCTAAA ATGTTATCTT AAAAGCCAC TCAAATCTCA AGGCATAAGG TAGAAATGCA AATTTGAAAA
 ATTACTCTCT CTATAGATTT TACAATAGAA TTTTCGGGTG AGTTTAGAGT TCCGTATTCC ATCTTTACGT TTAACCTTT

PstI

721 GTGGGCTGGG CCTTCTGCAG TTGATAAAAT ATTTTATTTT GGTTGTAATT TTGTAATATC CCGGGATATT TCACAAATTG
 CACCCGACCC GGAAGACGTC AACTATTTTA TAAAAATAA CCAACATTAA AACATTATAG GGCCCTATAA AGTGTTTAAAC

801 AACATAGACT ACAGAAATTTT AGAAACAAA CTTTCTCTCT CTTATCTCAC CTTTATCTTT TAGAGAGAAA AAGTTCGATT
 TTGTAICIGA TGTCTTAAAA TCTTTTGTGTTT GAAAGAGAGA GAATAGAGTG GAAATAGAAA ATCTCTCTTT TTCAAGCTAA

881 TCCGGTTGAC CGGAATGTAI CTTTGTITTT TTGTGTTTGT AACATATTC GTTTCCGAT TTAGATCGGA TCTCCTTTTC
 AGGCCAACTG GCCTTACATA GAAACAAAAA AAACAAAAA TTGTATAAG CAAAAGGCTA AATCTAGCCT AGAGGAAAAAG

961 CGTTTGTGCG GACCTTCTTC CGGTTTATCC GGATCTAATA ATAICCATCT TAGACTTAGC TAAGTTTGGG TCTGTTTTTT
 GCAAAACAGC CTGGAAGAAG GCCAAATAGG CCTAGATTAT TATAGGTAGA ATCTGAATCG ATTCAAACCT AGACAAAAAA

1041 GGTTAGCTCT TGTCAATCGC CTCATCATCA GCAAGAAGGT GAAATTTTGT ACAAATAAAT CTTAGAATCA TGTAGTGTCT
 CCAATCGAGA ACAGTTAGCG GAGTAGTAGT CGTCTTCCA CTTTAAAAAC TGTTTATTTA GAATCTTAGT ACATCACAGA

1121 TTGGACCTTG GGAATGATAG AACGATTG TTATAGCTAC TCTATGTATC AGACCCCTGAC CAAGATCCAA CAATCTCATA
 AACCTGGAAC CCTTACTATC TTGCTAAAC AATATCGATG AGATACATAG TCTGGGACTG GTTCTAGGTT GTTAGAGTAT

FIG. 19B



1201 GGTTTGTGC ATAAGAAACC TTCGACTAAC GAGAAGTGGT CTTTAAATGA GAGAGATATC TAAATGTGA TCCTAAAAGC
CCAAACACG TATACTTTGG AAGCTGATTG CTCTTCACCA GAAATTAAT CTCTCTATAG ATTTTACAAT AGAATTTTCG

1281 CCACTCAAAT CTCAAGGCAT AAGGTAGAAA TGCAATTGG GAAAGTGGC TGGGCCTTTT GTGGTAAAGG CCIGTAACTT
GGTGAGTTTA GAGTTCCGTA TTCCATCTTT ACGTTTAAAC CTTTCACCG ACCCGGAAAA CACCATTTCC GGACATTGGA

1361 AGCCCAATAT TAGCAAAACC CTAGACGCGT ACATTGACAT ATATAAACC GCCTCCTCCT TGTTTAGGGT TTCTACGTGA
TCGGGTTATA ATCGTTTGG GATCTGCGCA TGTAACCTGA TATATTTGG CGGAGGAGGA ACAAATCCCA AAGATGCACT

BamHI

1441 GAGAAGACGA AACACAAAAG GATCC Seq. ID No. 13

CTCTTCTGCT TTGTGTTTTTCT CTAGG Seq. ID No. 14

FIG. 19C

BamHI

1 GGATCCACAA ACTTACAAAT TTCCTGAAG TTGTATCCTC AGTACTTCAA AGAAATAGC TTACACCATA TTTTCTCTTG
CTAGGTGTT TGAAGTTTA AAGAGACTTC AACATAGGAG TCATGAAGTT TCCTTTATCG AATGTTT AAAAAGAAGC

81 TTTTCACAA TGCCGAACCT GTTCTCTTAT ATAGGAAAAC TCAAGGGCAA AATGACACG GAAAAATATA AAAGGATAAG
AAAAGTGTTC ACGGCTTGAA CCAAGGAATA TATCCTTTTG AGTTCCCGTT TTTACTGTGC CTTTCTATAT TTTCTTATC

FIG. 21A



HindIII

161 TAGTGGGGA TAAGATTCCT TTGTGATAAG GTTACTTTCC GAAGCTTAGT TGATAAAATA TTTTATTG GTTGTAATTT
ATCACCCCCT ATTCTAAGGA AACACTATTC CAATGAAAGG CTTGCAATCA ACTATTTTAT AAAATAAAC CAACATTAAA

241 TGTAAATACC CGGATATTT CACAAATTGA ACATAGACTA CAGAATTTTA GAAACAAAC TTTCTCTCTC TTATCTCACC
ACATTATAGG GCCCTATAAA GGTGTTAACT TGTATCTGAT GTCTTAAAG CTTTGTGTTG AAAGAGAGAG AATAGAGTGG

321 TTTATCTTTT AGAGAGAAAA AGTTCGATTT CCGGTGACC GGAATGTATC TTTGTTTTT TTGTTTGTG ACATATTTCC
AAATAGAAAA TCTCTCTTT TCAAGCTAAA GGCCAACCTGG CCTTACATAG AAACAAAAA AACAAAACAT TGTATAAGC

401 TTTCCGATT TAGATCGGAT CTCCTTTTCC GTTTGTGCGG ACCTTCTTCC GGTTTATCCG GATCTAATAA TATCCATCTT
AAAAGGCTAA ATCTAGCCTA GAGGAAAAGG CAAACAGCC TGAAGAAGG CCAATAGGC CTAGATTATT ATAGGTAGAA

481 AGACTTAGCT AAGTTTGGAT CTGTTTTTGT GTTAGCTCTT GTCAATCGCC TCATCATCAG CAAGAAGGTG AAATTTTGA
TCTGAATCGA TTCAAACCTA GACAAAAAAC CAATCGAGAA CAGTTAGCGG AGTAGTAGTC GTTCTTCCAC TTTAAAAACT

561 CAAATAAATC TTAGAATCAT GTAGTGCTT TGGACCTTGG GAATGATAGA AACGATTGT TATAGCTACT CTATGTAICA
GTTTATTAG AATCTTAGTA CATCACAGAA ACCTGGAACC CTTACTATCT TTGCTAAACA ATATCGAIGA GATACATAGT

641 GACCCTGACC AAGATCCAAC AATCTCATAG GTTTGTGCA TAAGAAACCT TCGACTAACG AGAAGTGGTC TTTTAATGAG
CTGGGACTGG TTCTAGGTG TTAGAGTATC CAAAACACGT ATACTTTGGA AGCTGATTGC TCTCACCAG AAAATTACTC

721 AGAGATAICT AAAATGTTAT CTTAAAGCC CACTCAATC TCAAGGCATA AGGTAGAAAT GCAAATTTGG AAAGTGGCT
TCTCTATAGA TTTTACAATA GAATTTTCGG GTGAGTTTAG AGTCCGTAT TCCATCTTTA CGTTTAAACC TTTCAACCCGA

FIG. 21B



PstI

801 GGGCCTTCTG CAGTTGATAA AATAATTTTA TTTGGTTGTA ATTTGTAAAT ATCCGGGAT ATTTCACAA TTGAACATAG
CCCGGAAGAC GTCAACTATT TTATAAAAT AAACCAACAT TAAACATTA TAGGGCCCTA TAAAGTGT TTAACTGTATC

881 ACTACAGAA TTTAGAAAAC AACCTTCTC TCTCTTATCT CACCTTTATC TTTTAGAGAG AAAAGTTTCG ATTCCGGTT
TGATGCTTA AAATCTTTTG TTTGAAAGAG AGAGAAATAGA GTGGAATAG AAAATCTCTC TTTTCAAGC TAAAGGCCAA

961 GACCGGAATG TATCTTTGTT TTTTGTGTT TGTAACATAT TTCGTTTTCC GATTAGATC GGATCTCCTT TTCCGTTTTG
CTGGCCTTAC ATAGAAACAA AAAAAACAA ACATTGTATA AAGCAAAAGG CTAAATCTAG CCTAGAGGAA AAGGCAAAAC

1041 TCGGACCTTC TTCCGGTTTA TCCGGATCTA ATAAATCCA TCTTAGACTT AGCTAAGTTT GGATCTGTTT TTTGGTTAGC
AGCCTGGAAG AAGGCCAAAT AGGCCTAGAT TATTATAGGT AGAATCTGAA TCGATTCAAA CCTAGACAA AAACCAATCG

1121 TCTTGTCAT CGCCTCATCA TCAGCAAGAA GGTGAAATTT TTGACAAATA AATCTTAGAA TCATGTAGTG TCCTTGGACC
AGAACAGTTA GCGGAGTAGT AGTCGTCTT CCACITTAAT AACTGTTTAT TTAGAATCTT AGTACATCAC AGAAACCTGG

1201 TTGGGAATGA TAGAAACGAT TTGTTATAGC TACTCTATGT ATCAGACCCT GACCAAGATC CAACAATCTC ATAGGTTTTG
AACCTTACT ATCTTTGCTA AACAAATATCG ATGAGATACA TAGTCTGGGA CTGGTTCTAG GTTGTTAGAG TAICCAAAAC

1281 TGCATATGAA ACCTTCGACT AACGAGAAGT GGTCITTTAA TGAGAGAGAT ATCTAAATG TTAICTTAA AGCCCACTCA
ACGTATACTT TGGGAAGCTGA TTGCTCTTCA CCAGAAAATT ACTCTCTA TAGATTTTAC AATAGAATT TCGGGTGAGT

KpnI

FIG. 21C

1361 AATCTCAAGG CATAAGGTAG AAATGCAAAAT TTGAAAGTG GGCTGGGCCT TGGTACCCGG AAAGTAACCT TATCACAAAG
 TTAGAGTTCC GTATTCCAATC TTACGTTTA AACCTTTTAC CCGACCCGGA ACCATGGGCC TTTCATTGGA ATAGTGTTTC

1441 GAATCTTATC CCCCACTACT TATCCTTTTA TATTTTCCG TGTCATTTT GCCCTTGAGT TTTCCTATAT AAGGAAGGAA
 CTTAGAATAG GGGGTGATGA ATAGGAAAT ATAAAAGGC ACAGTAAAA CGGGAACCTCA AAAGGATATA TTCCTTGGTT

1521 GTTCGGCATT TGTGAAACA AGAAAAATTT TGGGTAGC TATTTCTTT GAAGTACTGA GGATACAACT TCAGAGAAAT
 CAAGCCGTAA ACACCTTTGT TCTTTTAA ACCACATTGG ATAAAAGAAA CTTATGACT CCTATGTTGA AGTCTCTTTA

BamHI

1601 TTGTAAGTTT GTGGATCC Seq. ID No. 15
 AACATTCAAA CACCTAGG Seq. ID No. 16

FIG. 21D

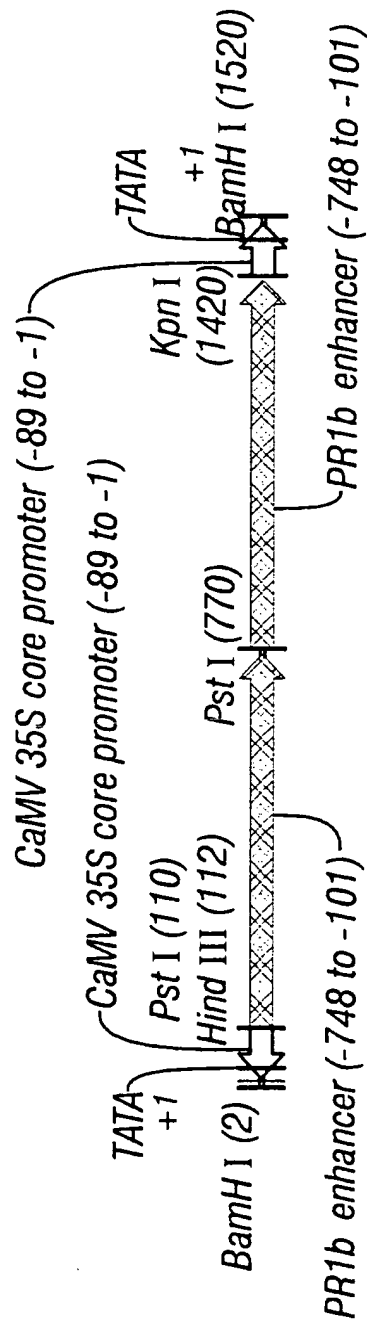


FIG. 22



BamHI

1 GGATCCAGCG TGTCCTCTCC AAATGAAATG AACTTCCTTA TATAGAGGAA GGGTCTTGGC AAGGATAGTG GGATTGTGCG
CCTAGTGC ACAGGAGAGG TTTACTTTAC TTGAAGGAAT ATATCTCCTT CCCAGAAGCG TTCCTATCAC CCTAACACGC

PstI HindIII

81 TCATCCCTTA CGTCAGTGGG GATCTGCAG AAGCTTCAGA CTCATTAACT TAAAGAAGA TATAGACTCA TTAACTTAA
AGTAGGGAAT GCAGTCACCT CTATGACGTC TTCGAAGTCT GAGTAATTGA ATTTCTTCT ATATCTGAGT AATTGAATTT

161 AGAAGATATA GATCCAACA CAAGTTCAAA ATTCATAAAC GTCAATCTTG GCTAAATTC TGAACATCAA TGCATTCCTT
TCTTCTAT CTAGGTTGT GTTCAAGTTT TAAGTATTG CAGTTAGAAC CGATTTAAG ACTTGAGTT ACGTAAGGAA

241 TAAATATAG ATAATAAGTT AGGATGTTGT CACTTCTTA AAGCATATTC CGACTGAGTC TGGTAGAATC TCATAAACTT
ATTTATATC TATTATTCAA TCCTACAACA GTGAAGAAT TTCGTATAAG GCTGACTCAG ACCATCTTAG AGTATTTGAA

321 TAGGCCTTAT CTCTTCAATT AGGCAATTAC TTACCTCCGC TCTACTTTAA GAAAATTCAA TGGAGTACAC CATTATTAA
ATCCGGAATA GAGAAGTTAA TCCGTTAATG AATGGAGGCG AGAIGAAATT CTTTAAAGTT ACCTCATGIG GTAATAATC

401 TTCATATAAA AATAAAATTA TATTAATTCT GTCTCTTGT GGTTCGCTCT ATCTTTTCT GTTTTCTGCTTCAACCAT
AAGTATATTT TTATTTAAT ATAATTAAGA CAGAGAACAA CCAAGCGAGA TAGAAAAAGA CAAAAGGACG AAGTTGGTAT

481 ACATATACAA GAACTACATT TTCCAAGCTA GATATATCTA ACATGACTGA CTTTGTAAT TTCTTTTGCC AAGTTAAAGA
TGATAIGTT CTTGATGIAA AAGGTTGAT CTATATAGAT TGTACTGACT GAAACATTGA AAAAAAGCC TTCAATTTCT

31/37

FIG. 23A



32/37

561 AAAAAATGA TGTATCCAA ATAATAAGA GAAAGAGCCC TAATGAAAAA AATGATTAC TATTAGATT GTTCAGCTAA
TTTTTTACT ACAATAGGT TATTATTCT CTTCTCGGG ATTACTTTT TACTAAATG ATAATCTCAA CAAGTCGATT

641 TCACATCAAT TATGGTTTC ATCAAGTATG ACTAATGGCG GCCTTAICT CACGIGATGT GACATTGAAA TTCTTTGACT
AGTGTAGTTA ATACCAAAG TAGTTCATAC TGATTACCGC CGAGAATAGA GTGCACTACA CTGTAACCTT AAGAAACTGA

PstI

721 TTAACACTAA TGTCATATGC TTTCAAAATTA ATAATCCGAT AAAGCTGCAG ACTCATTAAC TTAAAAGAAG ATATAGACTC
AATTGIGATT ACAGTATACG AAAGTTTAAT TATTAGGCTA TTTCGACGTC TGAGTAATTG AATTTCTTC TATATCTGAG

801 ATTAACCTAA AAGAAGATAT AGATTCCAAC ACAAGTTCAA AATTCATAAA CGTCAATCTT GGCTAAATTT CTGAACATCA
TAATTGAATT TTCTTCTATA TCTAAGGTG TGTCAAGTT TTAAGTATT GCAGTAGAA CCGATTTAAA GACTTGTAGT

881 ATGCATTCCT TTAAATATA GATAATAAGT TAGGATGTTG TCACTTTCTT AAAGCATATT CCGACTGAGT CTGGTAGAAT
TAGCTAAGGA AATTTTATAT CTATTATCA ATCCTACAAC AGTGAAGAA TTTCGTATAA GGCTGACTCA GACCATCTTA

961 CTCATAAACT TTAGGCCCTTA TCTCTTCAAT TAGGCAATTA CTTACCTCCG CTCIACITTA AGAAAAATCA ATGGAGTACA
GAGTATTGA AATCCGGAAT AGAGAAGTTA ATCCGTTAAT GAATGGAGGC GAGATGAAAT TCTTTTAAGT TACCTCATGT

1041 CCATTATTAA GTTCATAATA AAATAAAAT ATATTAATC TGTCCTCTG TATCTTTTC TGTTCCTG
GGTAATAAT CAAGTATATT TTTATTTAA TATAATTAAG ACCAAGCGAG ATAGAAAAAG ACAAAGGAC

FIG. 23B



1121 CTTCAACCAT AACATATACA AGAACTACAT TTTCCAAGCT AGATAATCT AACAAGACTG ACTTIGTAAA TTTCTTTTGG
GAAGTTGGTA TTGTATATGT TCTTGATGTA AAAGGTTGGA TCTATATAGA TTGTACTGAC TGAACACATTT AAAGAAAAACG

1201 CAAGTTAAAG AAAAAAATG ATGTTATCCA AATAATAAG AGAAAGAGCC CTAATGAAAA AAATGATTIA CTATTAGAGT
GTTCAATTC TTTTTTTTAC TACAATAGGT TTATTATTTC TCTTCTCGG GATTACTTTT TTTACTAAAT GATAATCTCA

1281 TGTTCAAGCTA ATCACATCAA TTATGGTTTT CATCAAGTAT GACTAATGGC GGCCTTTATC TCAGGTGATG TGACATTGAA
ACAAGTCGAT TAGTGAGTT AATACCAAAA GTAGTTCATA CTGATTACCG CCGAGAATAG AGTGCACACTAC ACTGTAACTT

KpnI

1361 ATTCCTTIGAC TTTAACACTA ATGTCATATG CTTTCAAATT AATAATCCGA TAAAGGTACC TATCTCCACT GACGTAAGGG
TAAGAAACTG AAATTGIGAT TACAGTATAC GAAAGTTTAA TTATTAGGT ATTICCAATGG ATAGAGGTGA CTGCATTCCC

BamHI

1441 ATGACGCACA ATCCCACTAT CCTTCGCAAG ACCCTTCCTC TATATAAGGA AGTTCATTTC ATTTGGAGAG GACACGCTGG
TACTGCGTGT TAGGTGATA GGAAGCGTTC TGGGAAGGAG ATATATTCTT TCAAGTAAAG TAAACCTCTC CTGTGCGACC

BamH

1521 ATCC Seq. ID No. 17

TAGG Seq. ID No. 18

FIG. 23C

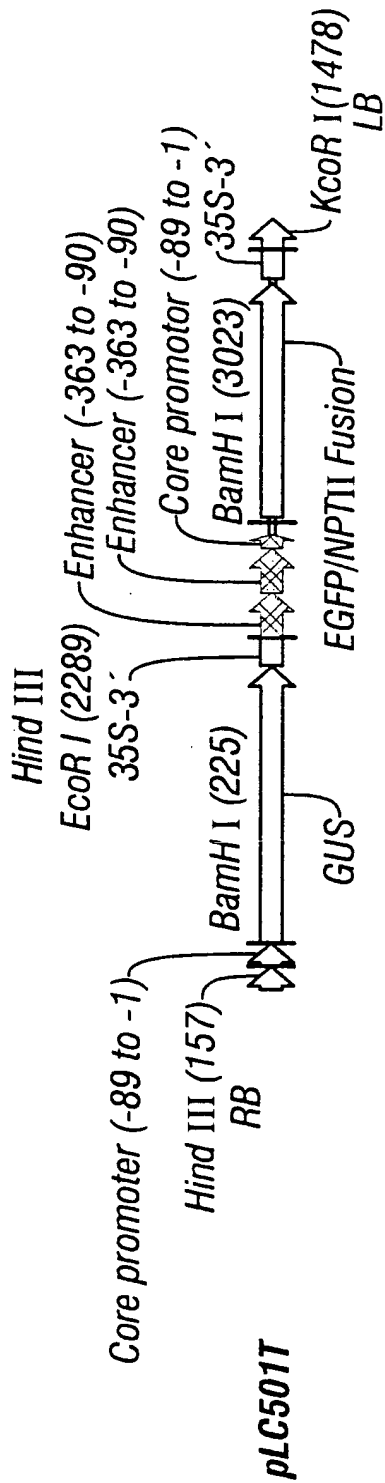


FIG. 24A

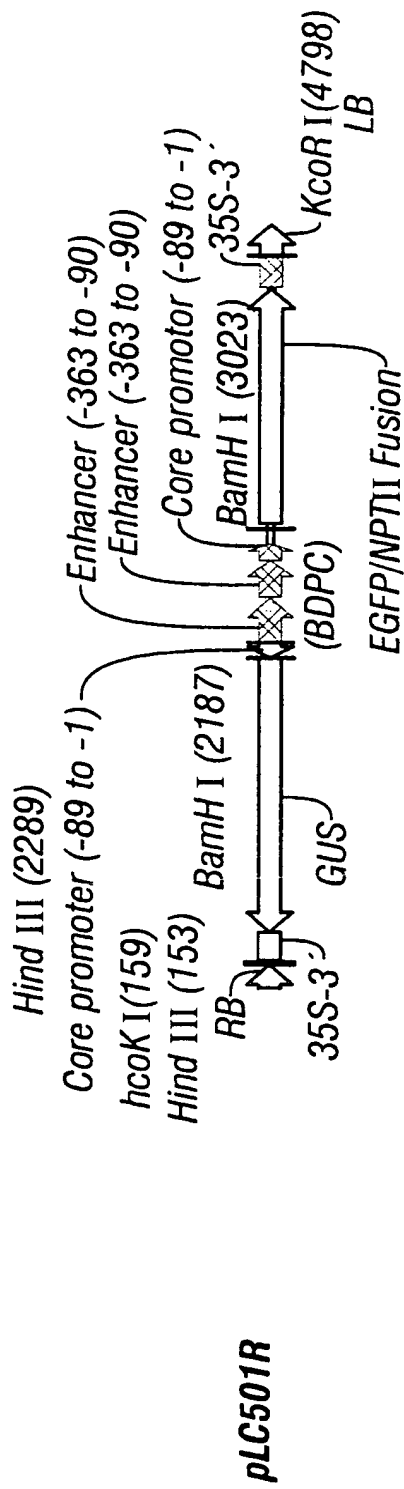


FIG. 24B

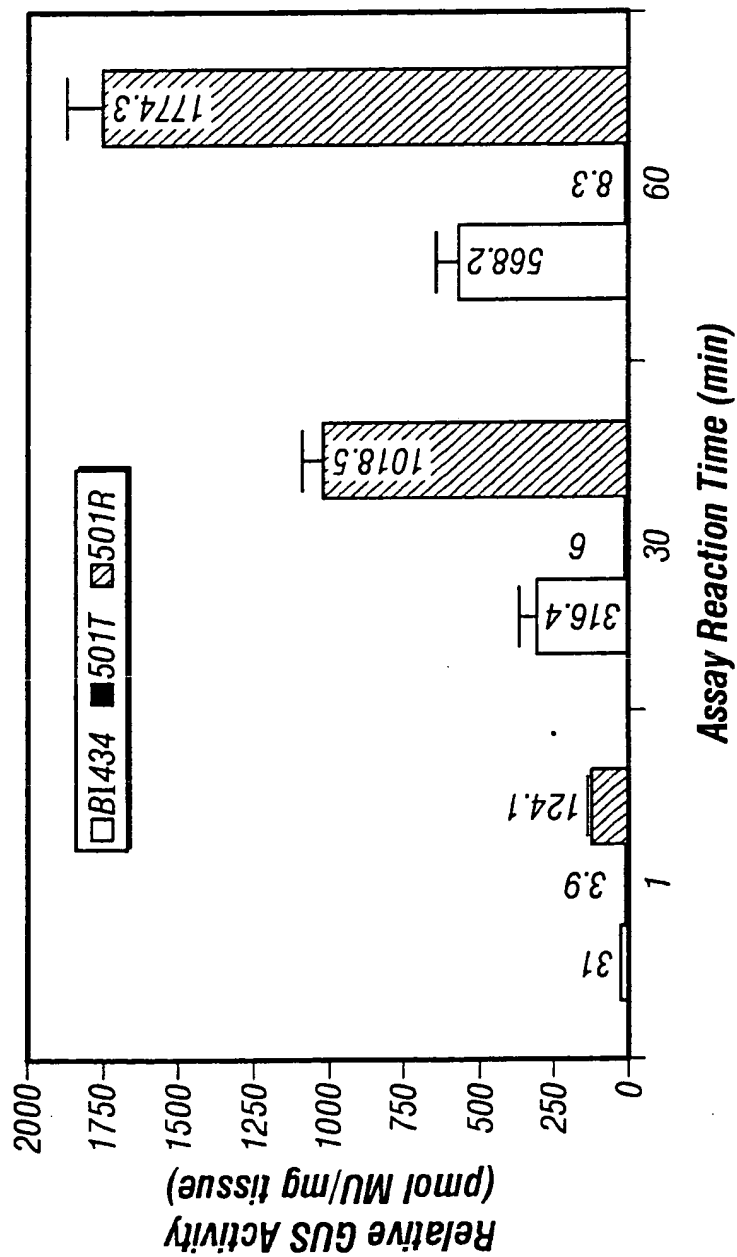


FIG. 25

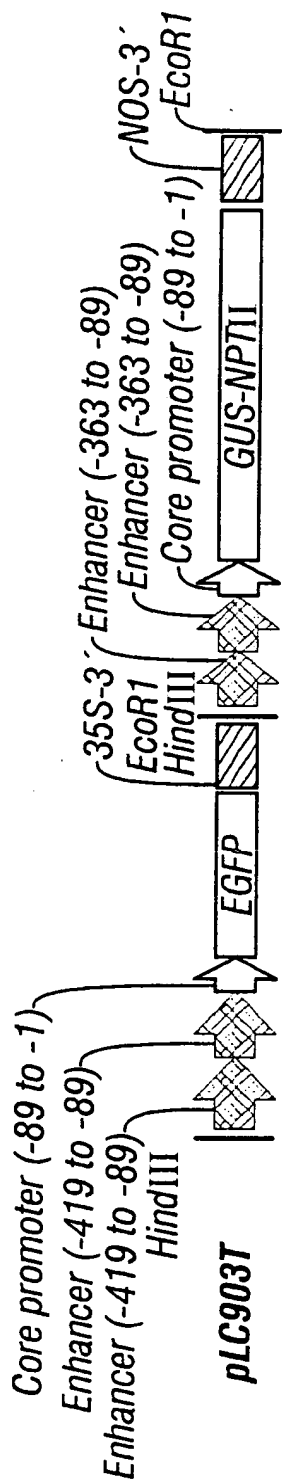


FIG. 26A

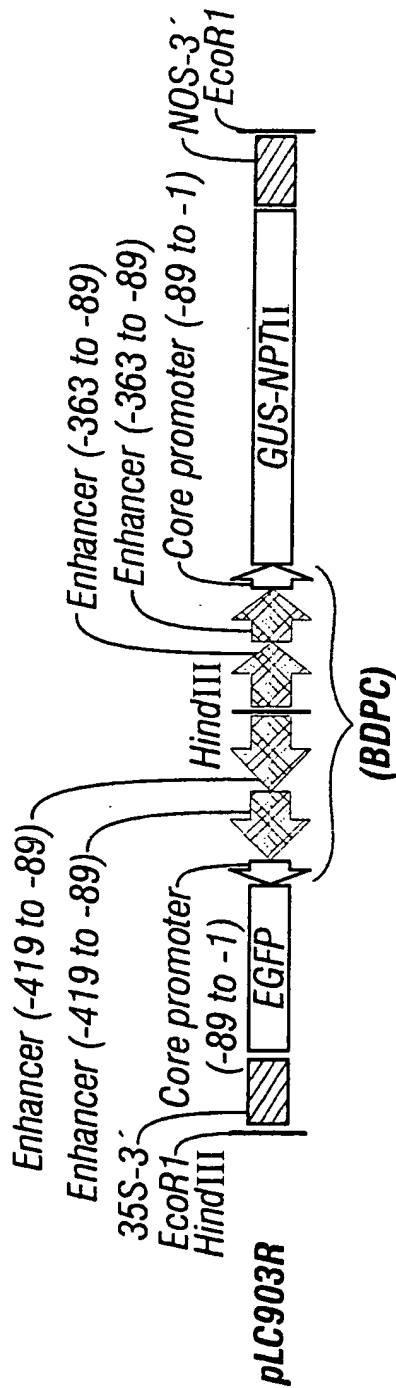


FIG. 26B



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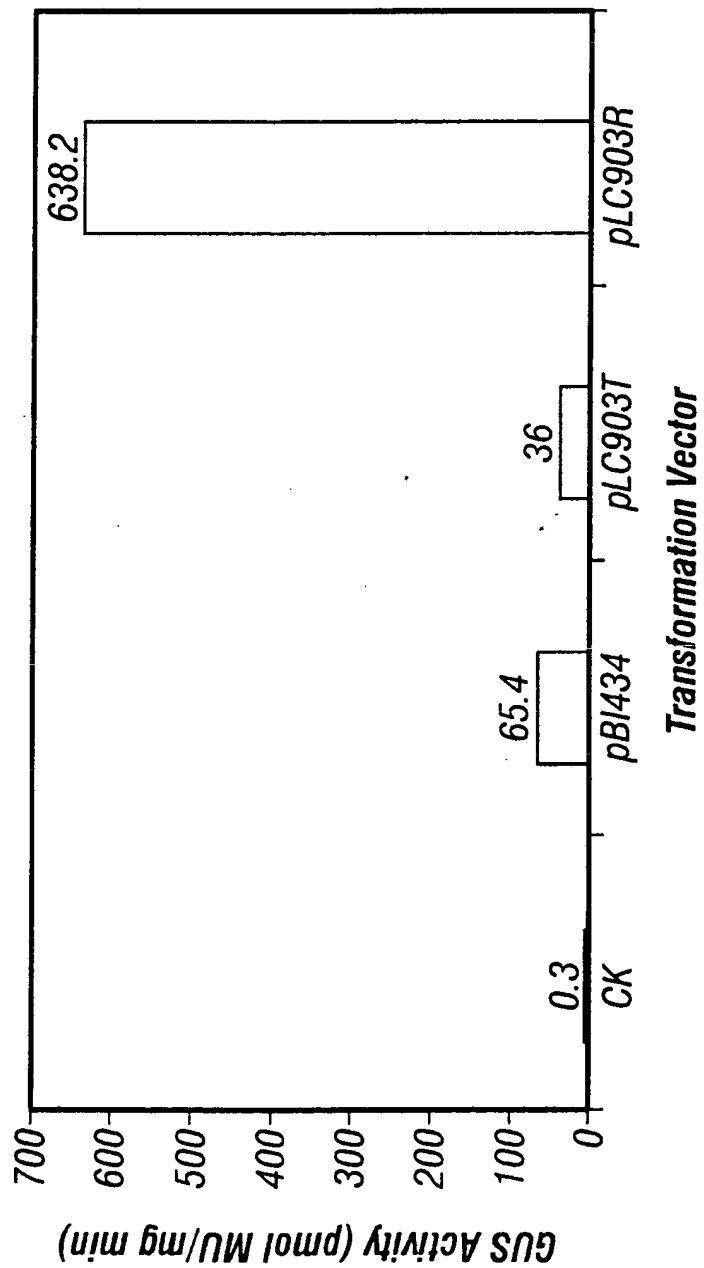


FIG. 27